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LETTER AND THE U S EPA REGION III APPROVAL AND ATTACHED RESPONSES TO
DRAFT COMMENTS REGARDING THE DRAFT EXPANDED SITE INSPECTION REPORT
FOR AREA OF CONCERN 1 (AOC 1) NORTH FISC WILLIAMSBURG VA
06/11/2015
U S EPA REGION III PHILADELPHIA PA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

June 11, 2015

Mr. Tom Kowalski
NAVFAC MIDLANT, Building N-26
Attention: Code OPHE3
9742 Maryland Avenue
Norfolk, VA 23511-3095

Subject: Draft Expanded Site Inspection Report for Area of Concern 1 North, Naval Weapons
Station Yorktown Cheatham Annex, Williamsburg, Virginia, December 2014

Mr. Kowalski:

Thank you for the opportunity to review the subject document. Your responses to EPA's draft comments on the document are acceptable. EPA has no further comments on the document. Please make the appropriate changes to the document and submit a final copy for our records. If you have any questions, please contact me at 215-814-2077.

Sincerely,

A handwritten signature in blue ink, which appears to read "Gerald F. Hoover".

Gerald F. Hoover, RPM
NPL/BRAC Federal Facilities Branch

cc: Wade Smith, VDEQ

Draft TOX Comments on AOC 1 North ESI

Thank you for the opportunity to review the draft *AOC 1 North, Expanded Site Inspection Report* for the Naval Weapons Station Yorktown Cheatham Annex. Overall, the methodologies used to complete the human health risk assessment appear appropriate; however, the following comments and recommendations must be considered as the draft ESI is finalized.

Major Concerns:

1. Section H.6.2.9 – Future Child Resident and Table H-3 – This section identified arsenic and cobalt as COCs in groundwater, but should have also included arsenic and cobalt as COCs in soil. The HIs for arsenic and cobalt, 0.6 and 0.2, respectively, exceed the HI of 0.1 for target organ HIs that exceed 1. Text of page H-11 reads, “COCs are those COPCs that contribute an HI greater than 0.1 to a cumulative target organ HI that exceeds 1....” Please include arsenic and cobalt as COCs in soil.
 - Add cobalt to bulleted list of COCs in soil on page 5-3 under “Future Resident (adult and child)” and “Under Future Residential Site Use” bullets, and as necessary in other relevant sections of document.

Response: the following bullet will be added to Section H.6.2.9, “COCs for soil (assuming exposure to soil and groundwater used as a potable water supply): arsenic and cobalt”. Under first bullet, first – in Section H.6.2.9, the following text will be added, “If groundwater used as potable water supply and child resident exposed to soil, arsenic and cobalt contribute to cumulative target organ HIs above 1.” 2nd bullet on page H-16 will be changed to following, “HI associated with exposure to soil for child resident exceeds target USEPA risk levels. No target organ HI exceeds USEPA acceptable level for exposure to soil alone, however, if child resident exposed to soil and groundwater used as a potable water supply, arsenic and cobalt contribute to cumulative target organ HIs above 1 and would be considered COCs.” Additionally, cobalt will be added as a COC in the summary section on page H-16 with the following text, “cobalt, COC if exposure to soil and groundwater used as a potable water supply”. These changes will also be reflected in Section 5.3. Table 5-3 will be updated to show arsenic and cobalt as COCs in the COC column for child resident soil, with the following footnote, “considered COCs if receptor exposed to soil and groundwater used as a potable water supply.”

2. *Section 7 – Conclusions and Recommendations* – Page 7-1, Section 7.1.2, last paragraph – The background comparison applied in this document uses detected concentrations in soil and groundwater compared to the 95% UTL of background. The comparison of the 95% UCL exposure point concentration to the background 95% UTL is a more appropriate comparison than the detected concentrations. The statement that “inorganic constituents in groundwater were determined to be likely representative of naturally occurring conditions” is questionable. Delete this paragraph or modify to reflect improved comparison.

Response: We might need to discuss this further. To my knowledge, comparing the 95% UCL exposure point concentration calculated in the HHRA to the base background 95% UTL is not something typically done, in fact to my knowledge, this has never been done or requested to be done at CAX.

3. Section 7 – *Conclusions and Recommendations* – Section 7.2 – Disagree with the “No further action” designation for groundwater pending an improved comparison to background.

Response: See response to Comment #2 above

Section 5 – Human Health Risk Assessment

4. Page 5-3, Section 5.3, HHRA Findings – As previously stated, a more appropriate comparison to background would compare the 95% UCL exposure point concentration to the 95% UTL of background. Recommend modifying the discussion of the comparison of site concentrations to background to use the 95% UCL exposure point concentrations rather than detected concentrations. In groundwater, the 95% UCL for arsenic and chromium, but not cobalt, exceeded the 95% UTL for background.

Response: See response to Comment #2 above

Appendix H – Human Health Risk Assessment

- Page H-5, Section H.4.1 – Please add statement addressing inhalation route. This is a route of exposure in the CSM but risks are not expected because concentrations in soil are low.

Response: The inhalation pathway was screened for soil, and as discussed in Section H.3.3 no COPCs were identified. The following sentence will be added to the end of the last paragraph in Section H.4.1. “No COPCs were identified for the volatile and particulate emissions from soil to air pathway for surface soil or combined soil, therefore inhalation of emissions from soil is not evaluated as a complete exposure pathway”.

- Page H-8, Section H.5.1, Toxicity Information – In second paragraph, delete statement “not verified by USEPA” in sentence about PPRTVs. PPRTVs are supported by the Agency.

Response: The statement will be deleted.

- Page H-13, Section H.6.1, 3rd and 4th paragraphs – Delete three sentences of 3rd paragraph describing the comparison of detected arsenic concentrations to background UTL. Delete second sentence of 4th paragraph.

Response: We disagree with deleting these sentences based on our response to Comment #2 above.

- Page H-14, Section H.6.2, 1st paragraph – delete ‘worst-case’ and describe exposure factors as ‘upper-bound.’

Response: The text will be deleted as requested.

- Page H-14, Section H.6.2, 3rd paragraph – delete, “During many construction projects....” This sentence is conjecture and does not add to the discussion.

Response: While we disagree with comment, we will delete the paragraph as requested.

- Page H-14, Section H.6.3, 1st paragraph – delete, “The noncarcinogenic toxicity factors are most likely an overestimate of actual toxicity.” This statement is conjecture and the ‘actual toxicity’ could be overestimated or underestimated: the ‘actual toxicity’ is a true unknown.

Response: The last sentence in 1st paragraph of Section H.6.3.1 will be deleted.

- Page H-14, Section H.6.3, 2nd paragraph – delete, “however, most of the experimental studies indicate the existence of a threshold level.” This statement is misleading. Animal studies do not possess the statistical power to demonstrate linear responses at low doses, and the appearance of a threshold in a bioassay is an artifact of the dosing and study design.

Response: The statement will be deleted as requested.

- Page H-14, Section H.6.3, 5th paragraph – Delete. The EPA provides PPRTVs on their website, so to state that “the USEPA has not approved these toxicity values” is incorrect.

Response: The second half of the second sentence will be deleted.

- Page H-16, Section H.7, Future Resident, last bullet – delete last sentence comparing detected concentrations to background UTL or rewrite using UCL compared to UTL.

Response: See response to Comment #2 above

Appendix I – Human Health Risk Assessment Tables

- Table 2.1 and 2.3 – footnotes – Recommend using dibenzo(a,e)pyrene as surrogate for benzo(g,h,i)perylene instead of pyrene. Dibenzo(a,e)pyrene and benzo(g,h,i)perylene have similar molecular weights and chemical structures. Please use screening toxicity value from dibenzo(a,e)pyrene (4E-2) for benzo(g,h,i)perylene, which would result in benzo(g,h,i)perylene as a COPC.

Response: Pyrene used as surrogate for benzo(g,h,i)perylene is based on previous recommendations from EPA Region III. No change will be made unless further information provided for EPA Region III’s change in previous recommendation.

- Table 2-2A and 2-4A – VF calculations are needed for phenanthrene, DDE, endosulfan, and gamma-chlordane (HLC is greater than 1E-5 for each).

Response: Phenanthrene will be added to Tables 2-2A and 2-4A. However, DDE, endosulfan, and gamma-chlordane are not considered volatile on the RSL table. The reason their HLCs are > 1E-5 is not because they are volatile, but because their water solubilities are very low. USEPA guidance in RAGS Part B uses two criteria to determine chemicals that easily volatilize, HLC > 1E-5 and MW < 200. These chemicals all have MWs over 300. Pesticides are not very volatile and we have never treated them as VOCs for evaluation in the groundwater-to-air pathway.

- Table 5.1 – Dates of RfD: Target Organ – different types of dates are used in this column, some are website access dates (IRIS) and others are date of publication (PPRTV and ATSDR). However, the distinction between document and website is difficult to define and recommend using date of publication for all values.

Response: We're not sure what needs to be revised. The date of publication of the specific PPRTV and ATSDR was included on the table. However, IRIS is a live database, and therefore the date the database was accessed is provided.

- Table 9.8 RME – Total Hair HI Across All Media – the value should be 2E-1 rather than 3E-1.

Response: Based on how the rounding was performed in Excel, the value is 0.3. However, the value will be changed to 0.2.

- Table 9.9 RME
 - Total Neurological = 1E+0
 - Total Skin HI = 3E+0
 - Total Vascular HI = 3E+0

Response: Based on how the rounding was performed in Excel, the values in the table were correct; however, the values will be changed as requested.

Thank you for the opportunity to review this report. If you have any questions, comments, or concerns, please contact me.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

April 14, 2015

SUBJECT: Draft Area of Concern (AOC) 1 North Expanded Site Inspection Report; Naval Weapons Station Yorktown Cheatham Annex, Williamsburg, Virginia; December 2014

FROM: Bruce R. Pluta, Coordinator
Biological Technical Assistance Group

TO: Gerald Hoover (3HS11)
NPL/BRAC Federal Facilities Branch

In response to your request, representatives of the BTAG have completed the review of the subject document and offer the comments presented below.

1. Section 2.2 on page 2-1 states that surface soil samples were collected from six locations to determine the extent of contamination. The specific sampling locations are shown in Figure 2-1. It is unclear why samples were not collected in the unnamed tributary that runs to the southwest of the site, as this represents a migration pathway for contaminants in soil to leave the site. It is also unclear why no samples have been collected from Jones Mill Pond as this is most likely the first depositional area downstream of the site. This issue should be clarified.

Response: Sampling was conducted as described in the final SAP (October 2013), as indicated in the second paragraph of Section 2.2, and was based on the results of the SI(see also the response to BTAG Comment 2).

2. Section 3.2 on page 3-2 states that surface water is generally not observed in the AOC 1 North drainage channel. Section J.2 on page J-3 in Appendix J also states that surface water and sediment samples were not collected because the unnamed tributary does not regularly contain water. A similar statement is made in Section J.5.4 on page J-17 in Appendix J. More specific information should be provided on the hydrology in this channel including whether the flow is intermittent and seasonally has flow or whether the channel only has flow immediately following storm events. According to the analytical tables in Appendix G, soil samples were collected in November 2008, which is a time of year when intermittent streams are unlikely to be flowing. Therefore, this would not have been an appropriate time to determine the hydrology in this tributary. If flow is determined to be intermittent, this may represent a data gap since no surface water samples have been collected. If this channel is intermittently or seasonally fed by groundwater, applying a dilution factor to groundwater concentrations as discussed in Section 6.5.2 (and in Section J.5.4.1 on page J-18 and Section J.5.5.2 on page J-19 of

Appendix J) would not be appropriate and would underestimate potential ecological risk since stream flow could be 100 percent groundwater-fed part of the year. Use of a dilution factor would also not be appropriate for receptors in the hyporheic zone. A dilution factor was the primary reason iron in groundwater was eliminated from further consideration as a contaminant of concern. If groundwater actually discharges into Jones Mill Pond instead of this unnamed tributary, sampling in Jones Mill Pond would be needed to assess this migration pathway.

Response: The Navy is unaware of the existence of any additional specific information on the hydrology of the AOC 1 North drainage channel. Information from the 2001 SI (1999 samples) was reviewed as part of the ESI; the AOC 1 North drainage channel within the site boundary was also dry at the time of that sampling (November), but one soil sample was collected in the drainage channel at the western (downgradient) edge of the site boundary. There were no significant ESV/UTL exceedances in that soil sample. While groundwater becomes shallower at the downgradient (north and west) edge of the site, groundwater discharge to the drainage channel appears unlikely within the AOC 1 North site boundary based on groundwater elevations (see Table 2-2). Downgradient of the site boundary, water is present, at least periodically, and historical samples are available. These samples will be qualitatively evaluated (see also the response to BTAG Comment 3).

Dilution factors account for dilution and attenuation as groundwater travels from the location of the monitoring well to the receiving water body, as well as when it discharges to the water body. The first part of the dilution (prior to discharge) is still applicable to pore water concentrations within the hyporheic zone. It should be noted that total iron in groundwater was consistent with background. The results of the groundwater evaluation do not warrant the collection of samples from Jones Mill Pond.

3. Section 6.3 on page 6-2 states that historical data collected for the 1999 Site Inspection were not quantitatively used in the ecological risk assessment due to their age. At a minimum, historical data should be compared to the more recent data to ensure other areas of contamination or additional chemicals are not overlooked.

Response: A qualitative evaluation of the historical (1999) data will be added to the ERA.

4. Section 7.2 on page 7-2 states that the proposed action for the site would be to develop and evaluate remedial alternatives to address unacceptable risk from site-related contaminants of concern in surface soil. The evaluation should also include the removal of the debris from the site, since it appears to be a source of contamination and could continue to leach contaminants if not removed.

Response: The ESI will be revised to clarify that debris removal will be also

considered as part of the EE/CA.

5. Section J.5.3.1.1 on page J-16 in Appendix J states that the concentrations of nine metals, cyanide, and two pesticides equaled or exceeded ecological screening levels based on maximum concentrations indicating potential risk to plants and soil invertebrates. As part of the Step 3A evaluation, mean and 95% upper confidence level soil concentrations were compared to screening levels to reduce the list of contaminants of potential concern even further to only five chemicals. When evaluating direct toxicity to plants and soil invertebrates, it is not appropriate to eliminate chemicals from further consideration based solely on comparison to means. This issue should be discussed so that hot spots of contamination are not overlooked.

Response: Maximum concentrations were used to select Step 2 COPCs consistent with EPA and Navy ERA guidance. For Step 3A, COPC selection considered background UTLs and central tendency chemical concentrations (since the endpoints evaluated for these receptor groups were based on communities/populations and not individual organisms), as well as the magnitude and frequency of ESV and UTL exceedances (which account for maximum concentrations).

6. Section J.5.5.2 on page J-19 in Appendix J states that five assessment endpoints were developed for aquatic habitats. The specific endpoints are shown in Table J-3. As stated previously, additional sampling is needed in Jones Mill Pond as it is within the migration pathway for this site from both surface runoff and groundwater. As part of the evaluation of Jones Mill Pond, upper trophic level receptors (birds [e.g., king fisher, great blue heron], mammals [e.g., raccoon, mink]) need to be added and evaluated.

Response: The results of the ERA for AOC 1 North do not warrant sampling Jones Mill Pond. The addition of upper trophic level receptor exposures to the groundwater evaluation is unnecessary as the COPCs from the screening (barium, manganese, and iron) are not considered bioaccumulative metals (Table J-4).

Thank you for the opportunity to review this document. Please contact me at x 2380 or John McCloskey at (804) 824-2404 if you have questions or wish to discuss these comments.